RESEARCH PROGRAM ON Livestock and Fish

CGIAR

More meat, milk and fish by and for the poor

CGIAR Research Program on Livestock and Fish
2013 Performance Monitoring Report

Lead Center: International Livestock Research Institute (ILRI)

CGIAR Center partners: CIAT, ICARDA, WorldFish

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www.livestockfish.cgiar.org

April 2014

ICARDA Science for Better Livelihoods in Dry Areas

WorldFish

ILRI INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

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CGIAR is a global partnership that unites organizations engaged in research for a food secure future. The CGIAR Research Program on Livestock and Fish aims to increase the productivity of small-scale livestock and fish systems in sustainable ways, making meat, milk and fish more available and affordable across the developing world. The Program brings together four CGIAR Centers: the International Livestock Research Institute (ILRI) with a mandate on livestock; WorldFish with a mandate on aquaculture; the International Center for Tropical Agriculture (CIAT), which works on forages; and the International Center for Research in the Dry Areas (ICARDA), which works on small ruminants. http://livestockfish.cgiar.org

The Program thanks all donors and organizations who globally supported its work through their contributions to the **CGIAR Fund**.

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Contents

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Acronyms

AAS	CGIAR Research Program on Aquatic Agricultural Systems
A4NH	CGIAR Research Program on Agriculture for Nutrition and Health
BecA	Biosciences for Eastern and Central Africa-ILRI hub
BNI	Biological Nitrification Inhibition
CBPP	Contagious bovine pleuro-pneumonia
CIAT	International Center for Tropical Agriculture
CRP	CGIAR Research Program
DFAT	Department of Foreign Affairs and Trade (Australia)
ECF	East Coast fever
FAO	Food and Agriculture Organization of the UN
FEAST	Feed Assessment Tool
GIFT	Genetic Improvement in Farmed Tilapia
ICARDA	International Center for Agricultural Research in the Dry Areas
IDO	Intermediate development outcomes
ILRI	International Livestock Research Institute
M&E	Monitoring and Evaluation
NIRS	Near Infrared Spectroscopy
PIM	CGIAR Research Program on Policies, Institutions and Markets
PPR	Peste des petits ruminants
RTB	CGIAR Research Program on Roots, Tubers and Bananas
SLU	Swedish Agricultural University
SNV	Netherlands Development Organization
SPAC	Science and Partnership Advisory Committee
TechFit	A tool for feed technology prioritization
WUR	Wageningen UR

A. Key messages

A.1 Progress and challenges

The vision of the CGIAR Research Program (CRP) on Livestock and Fish is for the health, livelihoods and future prospects of the poor and vulnerable, especially women and children, to be transformed through two pathways: through consumption of adequate amounts of meat, milk and fish, and through benefits from improved incomes and livelihood by participating in the associated animal source food value chains. The program seeks to achieve this vision by increasing the productivity of small-scale livestock and fish production systems and improving the performance of their associated value chains.

The program proposed a new model to enhance the relevance, urgency and impact of its research. It is designed to bring together collective capacity with CGIAR and other partners to develop and deliver appropriate integrated solutions for the pro-poor transformation of selected value chains. As part of the model, the program works with development partners to translate these solutions into large development interventions likely to achieve sustainable impact at scale. The process also defines longer-term research to prepare future breakthroughs that will ensure the continued viability and growth of these value chains.

This model is a new way of working for CGIAR centers that requires reorienting capacity, mobilizing new resources and establishing new types of partnerships and capacity to engage effectively in the selected value chains. The past year was one of continuing consolidation and an evolving appreciation of the challenges in implementing such an approach. The larger share of the program devoted to technology development that supports sustainable livestock and aquaculture intensification demonstrated good progress. A key achievement was to secure major new funding from the Bill & Melinda Gates Foundation to lead an initiative on East Coast fever vaccine development.

The part of the program responsible for engagement in the selected value chains gained momentum with increased activity in four of the nine target value chains. Two value chains (aquaculture in Uganda and small ruminants in Mali) were not feasible and the program re-directed this effort towards aquaculture in Bangladesh and small ruminants in Burkina Faso. Work advanced in the remaining three value chains at a modest level of activity while adequate bilateral funding is sought. At the program level, the management unit achieved its full complement of staff, and the Science and Partnership Advisory Committee (SPAC) began its oversight role.

The program faced three main challenges in 2013. The first has been to manage adaptively the under-resourced, yet overly ambitious plan of work described in the program proposal. This is being addressed by revising the work plan, sharpening the focus to match the available resources, and through active resource mobilization. Gaps in research capacity are being filled as new funding is secured and by leveraging the needed expertise through partnership.

A second challenge has been to develop the appropriate internal capacity and modalities to implement the value chain approach proposed by the program. This approach envisages multidisciplinary teams of researchers applying both technical and social science to identify constraints and solutions within value chains, with cross-cutting support provided by researchers with global expertise in areas like genetics, health, gender and feeds. As noted by the SPAC, this vision was not automatically achieved and will require continued attention and investment if it is to be achieved.

The final major challenge—shared across CGIAR—is developing the appropriate monitoring and evaluation (M&E) and performance management frameworks. Setting Intermediate Development Outcomes (IDOs) was an important step in defining the overall aim of our research efforts. Progress was made in developing indicators that will allow the program to monitor its contribution towards the IDOs. These indicators, however, are not well adapted to monitoring the progress of the research itself. The Theory of Change approach offers an improvement upon the logical frameworks used in the past, and we are exploring how it can be adapted for research M&E that would support and link to the development outcomes. Getting to a consensus on an M&E framework that is acceptable, feasible and affordable is critical since it will inform the appropriate strategy and investment required for establishing baseline or benchmark information.

A.2 Two most significant achievements/success stories

We are highlighting two achievements by the Feed and Forages team. Both are significant in that they represent a new generation of increasingly sophisticated ‘smart’ research outputs that address multiple objectives. While both are intended to increase the supply and quality of feed resources that will translate into more productive and profitable livestock systems and more highly nutritious animal-source food on the plate of the poor, one also works to reduce the competition

between food and feed for agricultural resources, the other reduces the potential trade-off between livestock production and climate change.

BNI *Brachiara*: A key breakthrough in 2013 was a proof-of-concept that we can breed a tropical pasture grass that can significantly suppress greenhouse-gas emissions by increasing N use efficiency, reducing N2O emissions and increasing carbon accumulation. CIAT scientists were able to include level of Biological Nitrification Inhibition (BNI) as a breeding objective for *Brachiaria humidicola* hybrids recently developed, and demonstrate that effects from BNI from *B. humidicola* pastures can be measured in a succeeding maize crop which suggests the greenhouse-gas benefits. Better N-efficiency in the subsequent maize crop was shown through higher grain yield achieved with lower amount of N fertilizer application. This was reported in a news item in *Nature* (Grass gets greener: Plant secretion curbs greenhouse-gas emissions from soil, 17 Sep 2013, 501, 291 doi:10.1038/501291a) and through a keynote presentation at 22nd International Grassland Congress. These results suggest that the CRP will be able to contribute to substantially increasing livestock (and crop) productivity while reducing GHG emissions per unit livestock product. CIAT scientists expect commercial lines to be available in 3 to 5 years (lines for testing will already be shipped to a private sector partner in April 2014).

Dual purpose maize breeding: The publication of a special issue of the journal *Field Crops Research* (September 2013) devoted to dual purpose maize marked two major milestones. First, it established a technology of maize breeding for improved feed quality that does not compromise the food production value of the plant. Second, it provided evidence of the demand it can address and ways to promote its uptake. By improving whole plant utilization, cultivars selected for the combined traits of grain production and stover quality reduce competition between maize grown for food versus that used primarily for animal feed. The publication culminates a number of years of research in demonstrating the wide range of suitable cultivars that perform well both for producing food for people and fodder for their livestock. ILRI scientists are authors of many of the articles in the special issue, reporting on research undertaken in South Asia, East and Southern Africa and Latin America. Maize is already a key crop in many of the value chains targeted by the Livestock and Fish CRP, and its importance is increasing. The continued development of dual-purpose maize also makes a key contribution as a joint effort with the MAIZE CRP.

A.3 Financial summary

The program executed USD 24.5 million (88%) of the total 2013 USD 27.4 million budget. The realized budget, which included USD 5.51m carried over from 2012, was lower than the originally approved budget (USD 33.8 million), reflecting a continued shortfall in CGIAR's Window 3 (W3) and bilateral funding. The shortfall limited the implementation of the program in several value chains and research areas. Gender research accounted for 8.9% of expenditures and the realized budget.

B. Impact pathway and intermediate development outcomes

The overall program impact pathway and theory of change is described in the program's **Results Strategy Framework and Intermediate Development Outcomes (IDOs) (v.2)** (http://livestock-fish.wikispaces.com/IDO). The program has been gaining experience and better understanding of its impact pathway by using the theory of change approach to frame engagement with stakeholders and develop more detailed narratives for the value chains in Tanzania, Uganda, Nicaragua and Egypt. The six IDOs adopted by program are:

IDO1: Increased livestock and fish productivity in small-scale production systems for the target commodities

IDO2: Increased quantity and improved quality of the target commodity supplied from the target small-scale production and marketing systems

IDO3: Increased employment and income for low-income actors in the target value chains, with an increased share of employment opportunities for and income controlled by low-income women

IDO4: Consumption of the target commodity responsible for filling a larger share of the nutrient gap for the poor, particularly for nutritionally vulnerable populations (women of reproductive age and young children)

IDO5: Lower environmental impacts per unit of commodity produced in the target value chains

IDO6: Policies (including investments) and development actors recognize and support the development of the small-scale production and marketing systems, and seek to increase the participation of women within these value chains, will contribute to all outcomes at the system level.

The wording of the IDOs may be further revised to improve consistency with the Common CGIAR IDOs once these have been decided. Two additional IDOs have been under consideration, but not yet adopted: one dedicated to gender (which is currently addressed as part of IDO3) and one to capture the multiple roles of forages and feed crops, especially in terms of productivity and environmental trade-offs.

A major exercise has been ongoing to develop appropriate indicators for these IDOs and a methodology for their estimation and that of target values. The indicators identified are described in a draft **IDO Indicator Manual.** Much work remains to define how the monitoring and evaluation framework will be operationalized in practice, including the appropriate use of benchmarking, baselines and dedicated data collection. To date, the program is relying on situation analyses under preparation in the selected value chain countries that describe a range of indicators of the current status of the target pro-poor value chain based largely on secondary data in the public domain. These situation analyses will be available at http://livestock-fish.wikispaces.com/Situational+Analysis+Report once completed. More detailed baseline information is being collected as bilateral projects are funded and implemented in each value chain.

C. Progress along the impact pathway

The following summaries are derived from detailed annual reports by value chain and CGIAR center, and synthesis reports by program Theme; these can be accessed at: http://livestock-fish.wikispaces.com/2013+Annual+Report.

C.1 Progress towards outputs

The program is structured in six Themes, three of which support the principal technology drivers of productivity and intensification in livestock and aquaculture systems: animal health, genetics and (animal) nutrition. The other three Themes apply a combination of relevant biological and social science to address key dimensions associated with pro-poor value chain development and intensification and ensuring more effective agricultural research-for-development that translates into impact.

Theme 1 - Animal health: This Theme generates data and materials to improve the pro-poor management of animal health and food safety in the selected value chains. It is a good example of cross-CRP synergy with joint work on food safety issues in our livestock and aquaculture value chains led by and reported under the Agriculture for Nutrition and Health CRP (A4NH). A4NH developed a framework to design and conduct integrated assessments of food safety and nutrition that were applied in several of our target value chains. It also contributed to or led major assessments in five value chains reported in numerous communications (see the A4NH annual report documentation), including the first isolation of *Trichinella* (cause of measly pork) in Uganda.

To initiate work in fish health, a literature review of aquatic animal diseases in Egyptian tilapia farms was completed which indicated a number of disease challenges that are present but so far have minimal impact on productivity. A related study on immunostimulants showed that *Spirulina platensis* improves resistance to *Aeromonas* among tilapia. Another study found that tilapia reduce grazing rates in the presence of toxic strains of *cyanobacterium Microcystis aeruginosa*, a dominant member of the plankton community in highly productive fishponds. Observed clinical signs included sluggish movement and changes in blood chemistry, suggesting control strategies may need to be developed.

In East Africa, the major threat to cattle remains East Coast fever. A key goal of the theme is to develop improved vaccines against the causative organism, *Theileria parva*, which requires a much better understanding of the interaction between the parasite and the host. To this end, comparative sequencing of parasites from the field and from the currently deployed live vaccine showed surprisingly that there is much greater heterogeneity among the field strains than in the vaccine. This raises further research questions as to how the current vaccine is so broadly protective in the field. In addition, work in this area will be accelerated by the production and validation achieved in 2013 of nine different peptide MHC tetramers, reagents which facilitate the detection and quantification of essential components of the host immune response ($CD8^+$ T cell response) and which define more precisely the parasite components which could comprise a novel vaccine.

Progress was also achieved in the development of **new tools** to identify the key components of improved vaccines against *contagious bovine pleuro-pneumonia* (CBPP), a disease affecting the Tanzania dairy system, with a new mutagenesis method for Mycoplasma genes based on di-codon usage. Epidemiological modelling also permitted assessment of optimal interventions for progressive control of the disease. A lyophilized vaccine against the *peste des petits ruminants* (PPR) was

successfully validated, which will now allow transfer of this process for this thermotolerant version of the vaccine to a commercial manufacturer.[1]

Theme 2 - Animal genetics: This Theme targets improved strains and breeding strategies that sustainably improve animal productivity. In the lab this year, new embryo vitrification protocols were adapted to enable more successful application of in-vitro bovine embryo production, freezing and thawing that will speed the supply of desired cattle genetics in the dairy value chains. To improve the efficiency of field research and speed genetic improvement programs, an innovative electronic mobile-based livestock performance, survey and meta-data collection and collation system was developed. In Bangladesh, methods for the short-term preservation of freshly stripped fish sperm ('milt') were developed. This technology will allow longer-distance transport and so support increased fish hatchery production and the expansion of fish farming to remote areas.

Increased community participation in **sheep performance recording** in community based improvement programs was achieved in Ethiopia (database accessible to flock owners), enabling best bet interventions to be tested and effective ram selection programs to continue. An information campaign on the benefits of biotechnological approaches to producing more resilient, productive livestock breed types was also undertaken.

Theme 3 - Feeds and forages: This Theme develops superior feed and forage options that respond to current and evolving demands to increase meat, milk and fish production while reducing the ecological footprint. Three key milestones were achieved this year, two which have already been highlighted at the program's success stories (see Section A.2): BNI Brachiaria and dual purpose maize breeding. The first milestone on BNI Brachiara was also associated with other papers presented at the International Grassland Congress in Sydney that showed a) the positive impacts of tropical forages, b) the potential of forage-based systems to mitigate greenhouse gas emissions (including the effects of BNI to reduce N_2O emissions) and c) the contribution of planted forages for adaptation to climate change (tolerance to waterlogging). The second milestone regarding dual purpose maize has been achieved to a considerable degree through jointly funded or complementary activities with the Maize CRP. Similarly, a range of collaborative activities that include joint training exercises and conventional and marker assisted breeding and gene association mapping for targeted genetic enhancement of fodder traits, biotic and abiotic stress traits and water-use efficiency have been undertaken with other commodity CRPs (GRISP, WHEAT, Dryland Cereals) and aligned with identification, breeding and dissemination of superior food-feed and forage cultivars.

The third milestone was the identification and rapid response to an opportunity for a new line of research on exploiting the **underuse of cassava peels** for animal and fish feed. Led by the Global Cassava Partnership, Livestock and Fish, joined with the Roots, Tubers and Bananas (RTB) and Humidtropics CRPs to contribute to a high-level consultation in Nigeria on cassava industry development, including the preparation of background studies. Joint research activities have been initiated to explore the potential for small-scale processing of this resource currently treated as waste.

Other forage breeding progress included successful recombination and evaluation of 325 selected, hybrid-derived sexual clones for *Brachiaria humidicola*. In the *B. ruziziensis/decumbens/brizantha* program, open-pollinated progenies of 125 selected hybrids (from the 2,731 evaluated in 2012) were evaluated and 103 selected for further evaluation, and in another activity 3 of 325 hybrids tested were identified for drought resistance based on three plant traits.

The Feed and Forage Technology Platform was further developed based on two key capacities. The first, the **joint Near Infrared Spectroscopy (NIRS) network** established in 2012, increased the number and scope of NIRS equations made available for comprehensive nutritive analysis of animal feeds and forages, and trained more staff in equations accession and standardization of NIRS spectra across NIRS machines. Representative feeds for aquaculture have now been included. The second key capacity further improved is the **assessment methodology based on the FEAST and TechFit** tools, which benefitted from feedback from their application in Ethiopia, Tanzania, India, Tunisia and Zimbabwe, and an expert workshop in Ethiopia that defined, developed and weighed appropriate criteria for prioritizing feed interventions. As another cross-CRP synergy, the tools were also applied in the Drylands CRP in Tunisia, Zimbabwe and India after joint training and capacity building exercises.

Results from **assessments of feed constraints** became available for several of our target value chains. An analysis of the fish feed value chain in Bangladesh identified priority needs at both farm and sector level, and there and in Egypt, the need for early engagement with the private sector was highlighted. In Nicaragua, forage options that thrive on water-logged soils were given high priority. Chopping and pulverizing crop residues to increase intake, reduce feed wastages and optimize use of purchased supplementary feed has been successful and adopted in dairy value chains in India and

[1] The program contributed researcher time to a BecA-CSIRO project funded by the Department of Foreign Affairs and Trade (Australia) that led the work on the thermotolerant vaccine, which kindly gave permission to share the results.

Tanzania. Preliminary results from pilot development of small scale business around chopping and pulverizing and mixing and compounding of purchases supplement ingredients in India and Tanzania were promising and attracted donor attention. The conceptual framework for a tool to guide investments for these small scale enterprises in feed densification, fortification and transport was developed and a set of supporting algorithms compiled. Fodder preservation options were investigated (silages targeting ruminants and pigs) in Latin and Central America and (silages and hay targeting dairy) in India. Suitable cultivars for food-feed crops (maize, sorghum, wheat, groundnut and chickpea) and forages (*B. humidicola, B. decumbens*/*B. brizantha*/*B. ruziziensis, Canavalia brasiliensis*, forage-type sorghum and pearl millet) were identified for value chains in Nicaragua, Uganda, Tanzania, Ethiopia, Vietnam and India.

Theme 4 - Value chain development: This Theme develops and applies methods and tools to assess and engage in pro-poor value chains for animal-source foods. It simultaneously generates evidence about the appropriateness of the technologies and institutional innovations that will be the basis to design integrated gender-sensitive interventions to take to scale. **Rapid assessments** were completed in 2 more value chains in 2013: Uganda and Ethiopia. An engendered toolkit for assessing pork value chains was adapted and applied in 35 villages across three districts there. Eight value chain sites were characterized in the Ethiopia case, with 27 national partners trained in applying the benchmarking tools. Improved gendered value chain assessment tools were tested in Nicaragua. To take stock of the methodological progress achieved, an **Agrifood value chain tools conference** was organized in Kampala in September 2013 jointly with the Policy, Institutions and Markets (PIM) CRP. The conference brought together 57 stakeholders to compare experiences using these types of tools and define an agenda for their continued testing and development.

Situational analysis is the approach developed to benchmark value chains at sectoral level. Analyses were completed in an additional 3 value chains - Ethiopia, India and Vietnam – and will be published in 2014. Based on the initial rapid assessment and situational analysis, in-depth value chain assessments are being designed and implemented. An in-depth assessment was completed in Tanzania and others initiated in 3 more countries (Ethiopia, Uganda, and Vietnam). Findings from the various analyses completed in 2013 increasingly reinforce evidence from earlier assessments of the challenges of high input costs and low output prices, together with high transactions costs associated with lack of standards and grades, poor market information and governance and inadequate coordination within the target value chains. Best bet interventions are then designed and tested to address these inefficiencies. In Tanzania, for example, we are exploring the use of collective action and credit check-off systems operated by milk processing plants, milk collection centres and itinerant milk traders to organize product marketing and improve the supply of inputs, including credit. Similar experiments to lower transactions cost and improve marketing efficiency are envisaged for other value chains. Participatory stakeholder analysis in Nicaragua identified the risk associated with dual purpose cattle value chain development of the agricultural frontier shifting to the Atlantic coast as particularly environmentally unsustainable due to accelerating land degradation, highlighting the need for appropriate intensification technologies.

Identification of initial sets of **best-bet technologies and strategies for evaluation** has been achieved to varying degrees across the program's value chain sites, and supported by a number of reviews of the literature and development experiences. This process is most advanced in Ethiopia, Tanzania and Uganda. Specific interventions included 8 village innovation platforms established to support feed-related interventions in Tanzania, including producer evaluation of novel feed and forage options, such as buffel grass (*Cenchrus ciliaris*) and the forage legumes *Clitoria ternatea*, *Stylosanthes hamata* and *S. scabra* with pastoralist communities as well as different stunt-tolerant Napier grass varieties in semi-intensive systems. In Egypt, the central technological intervention is already being taken to scale under the Swiss Development Corporation-funded IEIDEAS project with the dissemination of a genetically improved strain of Nile tilapia broodstock and fry to hatcheries and farms, and training on best management practices for aquaculture was rolled out to 1600 fish farmers. In Ethiopia, evaluation of 3 technologies was prioritized and initiated with stakeholders: sheep breeding programs, sheep marketing platforms and forage seed delivery and development.

Theme 5 - Targeting for sustainable interventions: This Theme ensures that the program focuses on the appropriate value chains, sites, beneficiaries and solutions that will generate the most impact with the best environmental outcomes. The **site selection** process was completed for an additional value chain, Vietnam. A stakeholder consultation in East Africa confirmed the **demand for tools and methods for *ex ante* environmental impact assessment** associated with pro-poor livestock and aquaculture value chain development. This permitted the start of a new Bill & Melinda Gates Foundation-funded project with this objective implemented in partnership with the Stockholm Environment Institute and CSIRO (Australia). An early output from the project was a review of applications of the Life Cycle Assessment methodology to livestock value chains.

Theme 6 - Gender and learning: This Theme contributes to two program outcomes. The first ensuring that women, men and marginalized groups have more equitable access to affordable and nutritious animal source foods through gender equitable interventions; the second supporting monitoring, evaluation and more active capturing and internalization of lessons learned.

Findings from a number of studies on the **role of gender in livestock systems** were synthesized in contributions to three major publications: an article on the gender asset gap, a book reviewing gender dimensions in a set of agricultural development projects, and a book on women and livestock. The case for gender transformative approaches in value chain research and strategies for integrating gender into rural advisory services were described, and a training manual on 'closing the gender gap in agriculture' was developed. Six training events and on gender concepts and research methods were provided to a total of 232 stakeholders. Gender analysis was mainstreamed in the target value chain assessments through studies completed in Uganda, Tanzania, Ethiopia and Nicaragua, and particular focus on a successful women's dairy cooperative in India in collaboration with the PIM CRP.

With respect to our learning agenda, the principal focus in 2013 was developing the program's **Results Strategy Framework** described in Section B above and an **IDO Indicator Manual** to describe proposed metrics, and drafting of our **Monitoring, Evaluation and Learning Framework**. Implementation of the frameworks began with a series of exercises to articulate the program's Theory of Change and impact pathways in five target value chains. As the result, **impact pathway narratives** have been developed for the value chains in Tanzania, Uganda, Nicaragua and Egypt. Much work remains to define how the monitoring and evaluation framework will be operationalized in practice, including the appropriate use of benchmarking, baselines and dedicated data collection.

C.2 Progress towards the achievement of research outcomes and IDOs

The program devotes science to generating novel technologies and effective strategies that support pro-poor livestock and fish value chain development and transformation. At this stage in the program, much of the emphasis is on improving productivity, so research outcomes being observed are mostly related to this first IDO.

IDO1 – Increased productivity: Two specific outcomes were achieved in promoting the uptake of East Coast fever vaccination in East Africa. ILRI responded to requests to provide **356,600 additional doses of the Infection and Treatment Method vaccine to distributors** in Tanzania, Malawi, Uganda and Kenya. These requests confirm increasing uptake of the vaccine and brings the total number of doses from the current vaccine batch produced by ILRI released in the region to over a million doses, allowing an estimated 500,000 calves to survive and benefitting an estimated 50,000 cattle-keeping households. Progress was also achieved to promote its more widespread commercial uptake in using research evidence to obtain **permission from the Ugandan authorities to allow use of the vaccine** pending its registration there.

A workshop was hosted to initiate **establishment of a Global PPR Research Alliance** led by regional and international organizations to capitalize on interest being generated by the development of the thermotolerant vaccine. The Alliance will be critical in identifying and coordinating key research issues linked to the scaling up of vaccine production and its deployment in vaccination campaigns.

In Bangladesh, research results on better disease management contributed to the ability of more than 100 shrimp hatcheries to deliver **larger volumes of quality aquaculture inputs**, including disease-free seed. Some 6100 farmers there were given access to disease-free shrimp seed without which they are otherwise at risk of being excluded from profitable markets due to disease threats.

The FEAST and TechFit **tools** continue to be taken up outside the program (500 downloads so far) and were introduced to national partners in Tunisia by the Drylands CRP. Similarly, the Ethiopia small ruminant value chain assessment toolkit was requested by an FAO development project.

Although **small scale feed processing options for crop residues** based on mechanical choppers is not a new technology, its current re-evaluation in project sites in Tanzania and India indicates current socio-economic factors now favor its adoption in areas where they had previously failed to achieve uptake. Spontaneous adoption of the technology as the basis for small business service development is now being observed spilling out from the project sites in these two countries.

Our work on **dual purpose food-feed crop breeding**, as highlighted in the success story for maize in Section A.2, aims at changing a still widely held research paradigm in crop and forage improvement from single trait focus to multi trait focus. This has been accepted only in certain instances to date, as for example in sorghum and pearl millet in India. It is now seriously being explored, however, for pulses in Ethiopia and maize, wheat and groundnut in India, and new cultivars release criteria are changing accordingly.

Dissemination of superior food-feed and forage cultivars has started at various scales, for example based on royalty reports on seed sales, over 300 000 ha are now reported planted to *B. decumbens*/*B. brizantha*/*B. ruziziensis* hybrids in Latin and Central America and growing by 100,000 ha per year (confidential company reports held by CIAT), and at small scale district level in India for maize and sorghum.

IDO2 – Increased supply: The approach adopted by the program to promote stakeholder engagement in two of the program's target countries generated evidence that there is growing support for the development of the target pro-poor value chains. In Tanzania, the Dairy Development Forum reported in our 2012 Annual Report adopted a variant of our program tagline and name of our flagship project in Tanzania as its name – **'Maziwa Zaidi'** ('more milk' in Kiswahili) – to communicate its collective objective with an appropriate emphasis on increasing supply for food security. In Uganda, the **Ugandan Pig Stakeholders Platform** was established as a working group and forum where all actors of the smallholder pig value chain will meet and address the main constraints and issues related to the value chain, and collectively look for solutions that promote its ability to increase production.

IDO3 – Increased employment and income (especially for women): An interesting result was observed in a study on root crops and dairy goats in Tanzania. Both male and female farmers from four study villages maintained that as a consequence of the **gender mainstreaming** in the study approach, which included participatory analysis of gender roles and relationship training, their families had begun sharing chores at home more equitably and were more aware of the household members' contribution to farm activities. The extent and modality of these reported changes in gender relationships will be explored further in this specific study, and monitored in other value chains.

IDO6 – Policies and investments: In Uganda, the pig value chain is often not among the priority areas for public agricultural investment either in research or development. One of the explicit objectives defined by the **Ugandan Pig Stakeholders Platform** is to raise the profile of the sector and especially its role in livelihoods for the over 1 million smallholder households that keep pigs, and advocate for a national research and development agenda.

No research outcomes were recorded for the remaining two IDOs on nutrition and environment.

C.3 Progress towards impact

Major contributions to understanding and validating the potential for impact from uptake of our research outputs, or impact per se, were mainly focused in the ongoing participatory development of Theories of Change and impact pathways for 5 of the program's target value chains. This process defines our best understanding as to how the program and its stakeholders expect to achieve their common objectives, and the associated assumptions. The outputs will be important to guide the program in identifying strategic studies to inform the program's progress towards impact.

More specific evidence was generated regarding potential for impact of our productivity IDO. We estimated that phenotyping for fodder quality and genetic enhancement can benefit food-feed crop and forage digestibility by about 3 to 5 percent units, resulting in potential increases in livestock productivity of 15 to 25%. The potential beneficial knock-on effects of BNI *Brachiaria* on crop yields and nitrogen use efficiencies in subsequent crop cycles for broader agricultural productivity and environmental benefits has already been noted.

Dissemination of superior dual food-feed cultivars as hybrids (as in the case of maize) was found to be relatively easy with their short delivery pathways. This is in contrast to open pollinated varieties of sorghum and groundnut where lack of seed, and therefore the need for seed multiplication, posed constraints to on farm field testing and larger scale dissemination.

D.Gender research achievements

Efforts of the program's gender team have been directed towards implementing the Gender Strategy, which was approved by the Consortium in May, 2013. The team's capacity was significantly expanded with the addition of new gender scientists dedicated to delivering the agenda as part of the value chain teams in Tanzania, Nicaragua and Ethiopia. Resource mobilization for gender research across the various value chains has been a priority, while contributing to defining project and value chain strategies aligned to the CRP gender strategy and collaborating on gender responsive value chain tools.

Gender mainstreaming is occurring in value chain countries by gender scientists reviewing all existing and proposed projects under the program. They have also begun reviewing and analyzing data from value chain assessments to determine key leverage points to achieve Gender Strategy outputs. Process indicators are also being developed in conjunction with the final gender indicators and impact pathway. Gender has been emphasized as a research topic within the program and the bilateral projects under the program, requiring the identification of new partners and continuing to expand gender capacity of both CGIAR and partner organizations from both the research and development sectors. To this end, the ILRI Capacity Development team has been engaged to develop a work plan to enhance gender capacity. A strategy to develop modular trainings adapted to various audiences has been agreed and presented at the CRP Gender working group workshop in October and through a poster.

Partners in the value chains have now been identified (in Uganda, Ethiopia, Tanzania and Nicaragua) to assist with expanding gender research. The gender team has taken a more active role in supporting efforts of the CGIAR Gender Network, with planned collaborative research efforts with gender scientists across the CRPs. The gender team played a central role in organizing the gender session at the CGIAR Knowledge Day in November, and where our program gender strategy was highlighted as a poster. The involvement of new recruits, the expansion and coordination of the gender research agenda across value chains, and the collaboration opportunities have contributed to enriching the scope of our work. A strong emphasis on research outputs and publications is expected in 2014.

The program's gender strategy defines 4 main areas of focus. Integrating gender into programmatic work occurred primarily through outputs related to capacity development and increasing women's access and control of resources in the value chain. An annual workshop was organized for the gender working group of the CRP and their partners from the value chains to share research and tools across value chains. In consultation with value chain teams, gender scientists helped define project and value chain strategies and assessment tools aligned to the CRP gender strategy. Strategic gender research occurred primarily through another pair of outputs related to developing gender transformative approaches in the value chain and exploring gender issues related to animal-source food consumption in poor households.

A guide for transformative approaches in the value chain was drafted and reviewed during the annual gender working group meeting. A study was commissioned in Ethiopia to identify existing opportunities to change gender norms that inhibit the range and quality of women's engagement in the small ruminant value chain and consumption of meat and milk. The gender team is exploring the linkages between gender analysis, transformative approaches and empowerment. The outputs from these explorations will contribute to the larger CGIAR-wide Gender Norms study in 2014 and an abstract on this research was submitted and accepted for the upcoming Food Security Conference.

The increased visibility and importance assigned to social and gender issues within the program have augmented attention to the topic and demand for collaboration by other scientists and development partners. However, collaboration with other teams across the program needs strengthening, which will be a primary objective of the gender team in 2014. Limited success in attracting bilateral funding to complement the Window 1/Window 2 (W1/W2) investment in human resources for the gender program remains a constraint to achieving the overall program outcome of *"poor women, men and marginalized groups have improved and more equitable access to affordable animal source foods through gender equitable interventions."*

E. Partnerships building achievements

The program has adopted a very intentional partnership strategy that recognizes the differences between tactical collaboration and more fundamental strategic partnerships, and the different nature of partnership with research versus development actors. While scanning widely and engaging in numerous tactical collaborations, particular attention is being given to establishing the foundation for selected strategic partnerships, both globally and within the selected value chains.

On the research side, strategic partnerships at the program level are being explored with Wageningen University Research (WUR) and the Swedish Agricultural University (SLU). When ILRI renewed its agreement with SLU in 2013, a special clause was included to provide the basis for a joint program with the Livestock and Fish CRP. Careful consideration is being given to the appropriate arrangements that might allow WUR and SLU to become full partners in the CRP.

An important new partnership in 2013 formed in the Animal Health Theme is a consortium led by ILRI that attracted funding from the Bill & Melinda Gates Foundation for a new East Coast fever vaccine initiative. The consortium builds on earlier collaborations with the Center for Ticks and Tick-Borne Diseases (Malawi), GALVmed (UK), the Institute of Tropical Medicine at Antwerp (Belgium), the Institute for Genome Sciences at the University of Maryland (USA), the Roslin Institute at University of Edinburgh (UK), the Royal Veterinary College (UK), the United States Department of Agriculture-Agricultural Research Service (USA) and Washington State University (USA). Under the Targeting Theme, another project funded by the Bill & Melinda Gates Foundation is allowing the program to tap into complementary expertise at CSIRO (Australia) and the Stockholm Environment Institute (Sweden) to address methods needed for assessing environmental impacts associated with development of our target value chains.

At value chain level, the program strengthened its strategic partnership with Sokoine University of Agriculture (Tanzania) to bring a broad range of faculty expertise and student research to the successful extension of a joint project funded by Irish Aid, supported by the signing of a long-term MoU and the inauguration of an ILRI project office on its Morogoro campus. The relationship with the Tanzania Livestock Research Institute (TALIRI) was similarly recognized by a long-term MoU. In Vietnam, initial collaboration in program sites led to MoUs with two new academic partners: Nong Lam University in Ho Chi Minh City and Tay Nguyen University in Dak Lak.

As endorsed at GCARD2, the program is dedicating particular attention to the challenge of working more closely with development partners, critical to our theory of change. Discussions have been initiated with two international NGOs, SNV and CARE, to explore whether, in addition to collaborative activities, there is sufficient interest in integrating our research and development efforts more systematically globally. At value chain level, scoping exercises have led to a number of MoUs being initiated with local development actors, such as VEDCO, SNV, NAADS, BRAC and AFRISA in Uganda and SNV, Land O'Lakes and Heifer International in Tanzania. The program is strengthening its collaboration with the Tanzania Dairy Board by providing targeted training and support to improve communication and management skills for its stewardship of the Dairy Development Forum. Collaboration was strengthened with Save the Children in Bangladesh in complementary provision of nutrition training to households involved in aquaculture training. Private sector actors Skretting, Aller Aqua and MAKRO as well as local private hatcheries are participating actively to improving business skills among commercial farmers in the main Egypt aquaculture project.

Alignment with national and regional priorities is being achieved mainly through direct involvement of relevant national authorities such as the Ministries of Livestock and Fisheries, their line departments, and the national agricultural research system during stakeholder engagement events in each value chain, as well as often being directly involved in research activities. In Uganda, for example, the Ministry of Agriculture, Animal Industry and Fisheries, district veterinary officers and local governments are full partners in the ongoing value chain assessment activities. At the regional level, alignment is monitored through periodic meetings with ASARECA in East Africa.

Joint work continued with other CRPs on food safety and zoonoses (A4NH), value chain assessment and foresight (PIM) and dual purpose food-feed crops (MAIZE, GRISP, WHEAT, Dryland Cereals). A particular highlight in the collaboration with PIM was a joint workshop organized in Kampala to share experiences with value chain assessment tools. Three new cross-CRP initiatives of note included the initiation of activities in the Bangladesh aquaculture value chain and efforts to identify how the work there can integrate with that ongoing in the Aquatic Agricultural Systems (AAS) hub. Secondly, a joint agenda with GRISP began to be developed on improving the utilization of rice straw for animal feed. Finally, we joined RTB and Humidtropics in an initiative led by the Global Cassava Partnership for the 21st Century that organized a high level consultation on 'Cassava-Base Feed Systems for Africa' in Ibadan, Nigeria in October, which concluded that recovering cassava peels—now treated largely as waste—may now be a viable option as a new major animal feed resource.

F. Capacity building achievements

The program recruited a Capacity Development Specialist in September 2013 to coordinate better capacity development efforts across the Themes and target value chains. A capacity development strategy and implementation plan is under preparation, and preliminary capacity assessments were conducted in Uganda and Tanzania to inform action plans. A specific effort was initiated in Uganda to prepare appropriate training interventions for various actor groups in the smallholder pig value chain. Training events were organized (in September and November) to support the Ethiopia small ruminant value chain and regional workshops to support the dissemination of animal genetic resources research results in West, East, and southern Africa. A total of 3,756 men and 1,371 women benefited from short-term training on topics such as value chain assessment/analysis, best aquaculture management practices, and better feeding and breeding practices. In addition, 24 male and 21 female MSc and PhD students were affiliated with research contributing to the program.

G. Risk management

The three major risks that may hinder the expected delivery of results by the program identified last year remain pertinent:

1) **Mobilizing sufficient W3/bilateral funding**: The program relies on securing restricted project grants to fund half of the overall program budget, especially those portions supporting operational costs. If the program continues to fall short in mobilizing bilateral funding, it will face challenges implementing its full agenda. This is being partly addressed through additional W2 funding commitments that the program has attracted, together with new W1 funding and additional attention to a more aggressive and pro-active resource mobilization strategy for bilateral funding.
2) **Poor alignment among partner centers:** While the four partner centers have developed a shared understanding of the program and its value chain approach, implementation of the full program remains constrained by legacy projects, insufficient new bilateral funding and associated difficulties in re-orienting existing resources. In addition to mobilizing the needed new funding, the program is undertaking various internal and external reviews to protect and strengthen the alignment across the centers in implementing the core program concept of value chain research into development.

3) **Weak program management systems:** The development of the CGIAR 'one corporate system' (OCS) has been expected to address the need for better performing systems, but so far among the program center partners, only WorldFish has come online. The program is investing in interim systems to address some critical needs, but may face challenges in adopting results-based management strategies.

We also note that the political situation has been tense in the two aquaculture value chain countries, Egypt and Bangladesh, and yet to be resolved. In each case, appropriate security precautionary measures have been established and followed to ensure the safety of program staff.

H. Lessons learned

H.1 Confidence of indicators

The indicators reported in Table 1 are derived from detailed data presented in the various background reports, which cite the supporting evidence. The program is more confident this year in the quality of the indicator data supplied because of the development and use of a simple database to capture and aggregate the data across the nine value chains, four centers and six Themes. This allowed for duplications to be more easily detected and resolved. There is still a lack of clarity about the definition of some of the indicators that may lead to inconsistency in reporting the numbers across CRPs and that the Consortium should resolve ahead of the 2014 Annual Report.

H.2 Changes in research direction

A few minor changes in research direction from those described in the approved program proposal were evident in the research strategies implemented by the program's six Themes in 2013. Two of the nine target value chains were re-selected, reflecting the program's adaptive management. The aquaculture value chain in Uganda, which was determined to have insufficient potential for significant growth at this time, was replaced by one in Bangladesh, where there is the opportunity to co-locate activities with AAS. Due to civil unrest in Mali, the small ruminant value chain was shifted to Burkina Faso. Business cases using agreed selection criteria were developed to justify the selection of the new sites.

The team in Egypt sought to re-orient the main project activity there, which has been focused on a largely technical intervention to disseminate an improved fish strain to commercial aquaculture farms, to align better with the pro-poor objectives of the program. With the support of the donor, Swiss Development Corporation, an M4P (Markets for the Poor) approach was adopted to identify opportunities to create youth employment and improve value addition by lower income value chain actors, while also considering strategies for fish products appropriate for poor consumers. An initial attempt to pilot small-scale catfish farming in backyard tanks there was not successful and will need to be reconsidered.

The Feed and Forages team initiated a new research activity to explore small-scale business development services and technology to recover cassava peel waste as a new byproduct source of animal feed that could increase feed availability across the selected value chains. A new project funded by the Bill & Melinda Gates Foundation allowed the Targeting Theme to open its research agenda on developing methods for assessing environmental impacts anticipated with intensification and eventual expansion of our selected value chains.

Other gaps in the program's research agenda reported last year remain to be addressed. The program is investing strategically to establish new capacity to initiate research in the priority areas of feed bioscience and herd health.

H.3 Lessons learned from evaluation

As the program's monitoring and evaluation system is being developed, the Science and Partnership Advisory Committee (SPAC) is playing a central role in evaluating progress. In 2013, the SPAC provided feedback in two critical areas. The first involved a review of the program Results Strategy Framework and logical framework (logframe) in which a number of weak points in the research work plan were identified. In response, the program is designing an intensive planning exercise in 2014 to guide the research teams in revising, harmonizing and refining their work plans and articulating more clearly their research strategies, while taking into account the anticipated evolution from Themes to Flagship Projects and to the program M&E system under development.

The second exercise undertaken by the SPAC was to evaluate the implementation of the program's value chain approach in the Tanzania smallholder dairy value chain during the SPAC meeting there in December. While endorsing the overall approach, including the engagement with local research and development actors and the appropriateness of the research

activities underway, the Committee highlighted the need for more effective integration and interaction across disciplines within the team, and between the value chain team and the other Themes, especially the technology platforms for animal health, genetics and feed and forages. Additional investment in creating a dynamic of cross-learning within the research team will be key to achieving the envisaged interdisciplinary approach. Mechanisms will also need to be devised that permit the value chain team to leverage the engagement of the other Themes.

I. Financial report

The financial reports are attached as Annex 3.

Annex 1. Program indicators of progress

Detailed explanation for the source of the indicators can be found at **http://livestock-fish.wikispaces.com/2012+Annual+Report** in the Source of Summary Indicators file and in the various Theme, center and value chain reports posted there. Explanatory notes at the bottom of the table are provided for selected indicators.

Indicator	Deviation narrative (if actual is more than 10% away from target)	2012		2013		2014
		Target	Actual	Target	Actual	Target
KNOWLEDGE, TOOLS, DATA						
1. Number of flagship "products" produced by CRP			20		n = 4 1. Concept; Biological Nitrification Inhibition 2. Concept; Mitigation potential of tropical forages and 3. Analytical framework; New aquaculture technology, Bangladesh 4. Analytical framework for piloting of best-bet interventions; Tanzania	N = 5
2. % of flagship products produced that have explicit target of women farmers/NRM managers			70%		n = 0%	
3. % of flagship products produced that have been assessed for likely			60%		n = 25% (Item 4 above)	

gender-disaggregated impact						
4. Number of ”tools” produced by CRP			38		n = 11 1. Training: Aquaculture Best Management Practices (set of 10 films) 2. Decision-Support Tools: Manual of Strain comparisons in Aquaculture species 3. Training: Carp Hatchery Manual 4. Training: Tilapia Hatchery Manual 5. Training: Traceability of carp and shrimp seed (poster) 6. Assessment Tool: Value Chain Assessment tool for dual-purpose cattle producers in Nicaragua 7. Decision-Support Tools: FEAST Feed Assessment Tool (updated from 2012 version) 8. Decision-Support Tools: Discussion tool for livestock keepers, TechFit (updated from 2012 version) 9. Training: Closing the Gender Gap in Agriculture: A trainer’s manual 10. Assessment Tool: Single Nucleotide Polymorphism (SNP) tool for dairy cow breed identification 11.Assessment Tool: Tool for rapid baseline assessment of trait, breed and breeding services preferences	N = 25
5. % of tools that have an explicit target of women farmers			72%		27% (Items 7,8 & 9 above)	
6. % of tools assessed for likely gender-disaggregated impact			72%		27% (Items 7,8,9 &11 above)	
7. Number of open access databases			14		n = 6	N = 6

maintained by CRP					Animal Feeds Analysis Application: http://temp.icarda.org/afawa Tropical Forage Selection: http://www.tropicalforages.info DAGRIS (origin, distribution, diversity, present use and status of indigenous farm animal genetic resources) dagris.info http://vietnam.dagris.info/ http://172.27.1.54/dagris_ug/ http://172.27.1.54/dagris_tz http://172.27.1.54/dagris_et/ AZIZI Bio-repository http://azizi.ilri.cgiar.org CGSpace repository of Program outputs https://cgspace.cgiar.org/handle/10568/3112 Animal Genetic Training Resources http://agtr.ilri.cgiar.org	
8. Total number of users of these open access databases			49,386		n = 364,497 180,000 (Tropical Forage Selection) 4,891 (Dagris) 1,666 (AZIZI) 2,167 (CGspace)	

					34,123 (Animal Genetic Resources)	
9. Number of publications in ISI journals produced by CRP			78		n = 77 of which: 1. 5 shared 50% Livestock and Fish CRP and 50% AAS CRP 2. 3 shared 50% Livestock and Fish CRP and 50% CCAFS CRP 3. 1 shared 50% Livestock and Fish CRP and 50% Humid Tropics CRP 4. 3 shared 33% Livestock and FishCRP, 33% CCAFS CRP and 33% Humid Tropics CRP	N = 57
10. Number of strategic value chains analyzed by CRP			24		n = 9 1. Ethiopia sheep value chain; Amhara, Tigray, Oromia, Somalia, Southern Nations, Nationalities and Peoples' Region (SNNPR) 2. Ethiopia goat value chain; Amhara, Tigray, Oromia, Somalia 3. Nicaragua dual-purpose cattle value chain 4. Tanzania dairy value chain, Mvomero, Lushoto, Kilosa, Handeni, Morogoro, Tanga, Dodoma 5. Vietnam pig value chain, Nghe-An, Hung Yen, Dak Lak, Dak Nong 6. Bangladesh mud crab value chain 7. India dairy value chain, Bihar and Assam 8. Uganda pig value chain, Kamuli, Mukono and Masaka districks, Uganda 9. West Africa small ruminant value chains, Burkina Faso, Senegal, Cote d'Ivoire and Mali and	N = 9
CAPACITY ENHANCEMENT AND INNOVATION PLATFORMS						
13. Number of trainees in short-term programs			54,253		n = 3,756 of which 4 shared with CRP A4NH (underlined below)	N = 5,976

facilitated by CRP (male)					1,600 – Aquaculture management practice 10 – Database management 69 – Research skills, statistics 38 – Molecular characterization 26 - Value Chain Benchmarking : http://livestockfish.wordpress.com/?p=2775&preview=true 4 - Value Chain Assessment: http://livestock-fish.wikispaces.com/eta_vcawriteshop_feb2013; http://www.worldfishcenter.org/resources/publications/value-chain-analysis-egyptian-aquaculture 2 – NIRS Feed & Fodder Technology Platform 70 – FEAST & TechFIt Tool Use; http://milkit.wikispaces.com/Outputs+and+reports 122 – Gender integration & tools 3 – Systems dynamics modeling 13 – Dairy feed/health management; http://milkit.wikispaces.com/Meetings+and+Workshops 3 – Dairy cooperative management 890 – Dairy feeding 38 – Chicken production 366 – Biogas production from cattle manure 4 – Food safety (milk) (50% A4NH & 50% Livestock and Fish CRP) 37 – Tropical livestock and fish breeding; http://www.worldfishcenter.org/resource_centre/Value-chain-analysis-of-Egyptian-fish-seed-production.pdf 107 – Animal genetic resources 6 - Research skills for dairy genetics 109 – Fish nursery skills; http://www.worldfishcenter.org/resource_centre/Value-chain-	

					analysis-of-Egyptian-fish-seed-production.pdf 63 – Fish hatchery management skills; http://www.worldfishcenter.org/our-research/outcomes/stories-of-change/milt-preservation-technique-doubles-fish-hatchery-production 1 – Mass fry production for commercial producers 102 – Principles of profitable fish farming 12 – Management of value chain analysis feedback sessions with farmers 45 – Pig farming 16 – Immuno-informatics	
14. Number of trainees in short-term programs facilitated by CRP (female)			17,143		n = 1,371 of which 2 shared with CRP A4NH (underlined below): 40 –Fish Retailer marketing 5 – Molecular characterization 3 - Systems Dynamics modeling 14 – FEAST & Techfit Tool Use 20 – Dairy feed/health management; http://milkit.wikispaces.com/Meetings+and+Workshops 22 – Dairy cooperative management 822 – Dairy feeding 40 – Dairy processing 25– Chicken production 146 – Biogas production from cattle manure 1 – Vitrification method for bovine embryos 2 – Food safety (milk) (50% A4NH CRP & 50% Livestock and Fish CRP) 30 – Tropical livestock and fish breeding;	N = 5,666

					http://www.worldfishcenter.org/resource_centre/Value-chain-analysis-of-Egyptian-fish-seed-production.pdf 38 – Animal genetic resources 4 – Research skills for dairy genetics 1 – NIRS Feed & Fodder Technology Platform 4 – Management of value chain analysis feedback sessions with farmers 25 – Pig farming 111 – Gender integration and tools 17 – Immuno-informatics 1 – GIS and spatial analysis	
15. Number of trainees in long-term programs facilitated by CRP (male)			33		n = 24 male trainees: Masters: 10 PhD: 14 Post-Doctoral: 0 Fellowships: 0 Bachelors: 0	n = 7
16.Number of trainees in long-term programs facilitated by CRP (female)			21		n = 21 female trainees: Masters: 6 PhD: 11 Post-Doctoral: 1 Fellowships: 3 Bachelors: 0	n = 10
TECHNOLOGIES/PRACTICES IN VARIOUS STAGES OF DEVELOPMENT						
18. Number of technologies/NRM			41		n = 44 of which 1 shared with DS CRP (No. 13 underlined below)	n = 32

practices under research in the CRP (Phase I)					1. Biological; GIFT Generation 12; Jitra, Kedah, Malaysia 2. Biological; GIFT Generation 13; Jitra, Kedah, Malaysia 3. Biological; Generation 9 Akosombo tilapia strain; Akosombo, Ghana 4. Biological; Generation 11 Nile tilapia in Abbassa strain; Abbassa, Abo-hamad, El-Sharkiya,Egypt 5. Biological; Generation 5, freshwater prawn; India 6. Biological; Generation 4 African catfish; Abbassa, Abo-hamad, El-Sharkiya,Egypt 7. Biological; Generation 5 Blue Tilapia; Abbassa, Abo-hamad, El-Sharkiya,Egypt 8. Biological; Rohu Carp breeding population Jassore, Bangladesh 9. Biological; Abbassa improved strain; Egypt 10. Biological; Genetic selection program on tilapia, Southern Bangladesh 11. Biological; Community-based sheep breeding program; Atsbi & Doyanga, Ethiopia 12. Management & Cultural practices; sheep marketing, Atsbi, Ethiopia 13. Mechanical & Physical: Development of forage seed systems; Doyogana, Ethiopia (80% CRP DS ESA & 20% CRP 3.7) 14. Biological; Improved forage germplasm; Colombia - Cauca, Llanos 15. Biological; Brachiaria breeding lines; Colombia - Valle del Cauca, Llanos 16. Biological; Biological Nitrification Inhibition; Colombia - Valle del Cauca, Llanos 17. Biological; Assessment of Brachiaria varieties and hybrids; Colombia - Valle del Patia, Llanos, Cauca; Nicaragua –Camoapa (Boaco), Siuna (RAAN: Región Autónoma Atlántico Norte) and El Rama (RAAS: Región Autónoma Atlántico Sur); Panama – Instituto de Investigacion Agropecuaria de Panama (IDIAP)- Gualaca research station; Kakamega in Kenya; Xieng Khuang, Savannakhet, Champasak, Xekong and Attapeu provinces in Laos; Kampong Cham and Ratanakiri provinces in Cambodia, Dak Lak and Dak Nong provinces in Vietnam. 18. Biological; Sweet potato leaves and cassava vines for feed ratios; Mvomero district in Morogoro region and Kongwa district in Dodoma region, Tanzania. 19. Management & Cultural practices; dairy hub model based on chilling plants; Tanga	

					and Morogoro regions, Tanzania; Rift Valley and Central Regions in Kenya. 20. Management & Cultural practices; dairy hub model based on check-offs for inputs & services provided through milk traders; Tanga and Morogoro regions in Tanzania; Wakiso, Mukono, Jinja and Masaka districts in Uganda. 21. Management & Cultural practices; dairy hub model based on check-offs for inputs & services provided through cattle traders; Tanga and Morogoro regions in Tanzania. 22. Biological; Dual purpose crops (wheat, maize, oats, barley & finger millet); Uttarakhand, India 23. Biological; feed grasses (Napier, Setaria, barseem & temperate grass); Uttarakhand, India 24. Mechanical & Physical; feed troughs & chaff cutters; Uttarakhand, India 25. Biological; improvement in basal diet via fortification & densification of crop residues, Hyderabad, India 26. Biological; feed concentrates; Bihar, India 27. Biological; feed mineral supplementation; Odisha, India 28. Biological; straw chaffing; Odisha, India 29. Management & Cultural practices; use of soya-based fish feeds; Abbassa, Abo-hamad, El-Sharkiya, Egypt 30. Management & cultural practices; small-scale catfish farming; Abbassa, Abo-hamad, El-Sharkiya, Egypt 31. Biological; On-station performance of Abbassa improved strain; Abbassa, Abo-hamad, El-Sharkiya, Egypt 32. Biological; Semen vitrification protocols; ILRI Nairobi, Kenya 33. Biological; Electronic Cattle Phenotyping, ILRI Nairobi, Kenya 34. Biological; Identification of genes responsible for special adaptation in Pakistani goats; Punjab, Pakistan 35. Biological: Live vaccine for East Coast Fever, ILRI, Kenya	

					36. Biological; Subunit vaccine for East Coast Fever, ILRI, Kenya [2]37. Biological; Vaccine for Contagious Bovine Pleuropneumonia , ILRI, Kenya 38. Management and cultural practices; Diagnostic assay for Contagious Bovine Pleuropneumonia, ILRI, Kenya [1.]39. Biological; Vaccine for African Swine Fever, ILRI, Kenya [1.] 40. Management and cultural practices; Biosecurity protocol for African Swine Fever, ILRI, Kenya 41. Biological; Modeling interventions for Contagious Bovine Pleuropneumonia, ILRI, Kenya [1.] 42. Biological; Thermostable vaccine for Peste des Petits Ruminants, ILRI, Kenya 43. Management and cultural practices; feeding strategies for local vs improved pig genotypes; Masaka, Uganda 44. Management and cultural practices; weight estimation via body measurements of local vs improved pigs, Masaka, Uganda	
19. % of technologies under research that have an explicit target of women farmers			29%		n = 18% (18,20,21,22,23,24,25,30)	
20. % of technologies under research that have been assessed for likely gender-disaggregated impact			12%		n = 9% (19, 20,21,22)	
• 23. Nu			3		n = 25 technologies field tested:	n = 16

[2] CRP3.7 contributed researcher time to the BecA-CSIRO-DFAT project on Peste des Petits Ruminants and African Swine Fever and which kindly gave permission to share the results.

mber of technologies /NRM practices field tested (phase II)					1. Biological; GIFT Generation 12; Jitra, Kedah, Malaysia 2.Biological; GIFT Malaysia tilapia strain tested against Akosombo strain; Akosombo, Ghana 3. Biological: GIFT tilapia Generation 12 tested against 3 Philippines strains; Philippines 4. Biological; Generation 9 Nile tilapia in Abbassa strain; Abo-hamad, El-Sharkiya,Egypt 5. Biological; Brachiaria humidicola varieties & hybrids; Nicaragua - Camoapa (department of Boaco) and Nueva Guinea (RAAS: Región Autónoma Atlántico Sur) 6. Biological; Novel Brachiaria varieties and hybrids; Kenya, Rwanda, Tanzania, Uganda, Laos, Colombia, tropical USA, Brazil (with partners) 7. Biological; Dual purpose crops (wheat, maize, oats, barley & finger millet); Uttarakhand, India 8. Biological; feed grasses (Napier, Setaria, barseem & temperate grass); Uttarakhand, India 9. Mechanical & Physical; feed troughs & chaff cutters; Uttarakhand, India 11. Biological; feed concentrates; Bihar, India 12. Biological; feed mineral supplementation; Odisha, India 13. Biological; straw chaffing; Odisha, India 14. Management & Cultural practices; marketing practices for women's fish retailer groups; Governorates of Feyoum, Behera, Kafr El Sheikh, Sharkia, Mineya, in Egypt 15. Management & Cultural practices; small scale catfish farming; Sharkia Governorate, Egypt 16. Management & Cultural practices; desert aquaculture technologies; Mineya Governorate, Egypt 17. Management & Cultural practices; on-farm performance of improved Abbassa strain; Governorates of Feyoum, Behera, Kafr El Sheikh, Sharkia, Mineya, in Egypt 18. Management & Cultural practices; fish fry holding tanks for reducing mortality; Lilongwe, Malawi 19. Management & Cultural practices; all-male fish fry production hatchery, Lilongwe, Malawi	

					20. Biological; Growth trial of improved GIFT strain from Malaysia compared with local GIFT strain, Jessore District, Bangladesh 21. Biological; Growth trial of performance between two strains of Rohu; Jessore District,Bangladesh 22. Management and Cultural practices; Milt shipping from good brood stock at low temperatures to distant hatcheries; Jessore & Barisol Districts, Bangladesh 23. Management and Cultural practices; Hatchery water aeration and water quality; Jessore, Barisol and Faridpur Districts, Bangladesh 24. Management and Cultural practices: Delivery system for Peste des Petits Ruminant vaccine, Uganda and Sudan 25. Biological; Live vaccine for East Coast Fever, Laikipia, Kenya	
27. Number of technologies/NRM practices released by public and private sector partners globally (phase III)			1		n = 4 technologies released: 1. Genetically-improved tilapia strains; Egypt, Ghana, Bangladesh 2. Aquaculture best management practices; Egypt 3. Brachiaria hybrid Cayman; Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Venezuela, USA, Vanuatu, Laos, Mexico (via private sector partners) 4. Single Nucleotide Polymorphism (SNP) tool for dairy cow breed identification, Ethiopia, Kenya, Uganda, Tanzania via National Agricultural Research Services	n= 11
POLICIES IN VARIOUS STAGES OF DEVELOPMENT						
28. Numbers of Policies/ Regulations/ Administrative Procedures Analyzed (Stage 1)			19		n = 2 1. Agricultural Resources and Food Safety: Aquaculture regulations; Egypt 2. Agricultural Resources; Breeding services delivery options for cattle in East Africa; Kenya, Tanzania and Uganda	n = 4
29. Number of policies / regulations			3		n = 2	

/ administrative procedures drafted and presented for public/stakeholder consultation (Stage 2)					1. Agricultural Resources: Hatchery Act, Bangladesh 2. Agricultural Resources: Fish and Shrimp Feed Law, Bangladesh http://www.worldfishcenter.org/resource_centre/USAID-Aquaculture-2nd-Annual-Report-2013.pdf	
30. Number of policies / regulations / administrative procedures presented for legislation(Stage 3)			1		n = 0	n = 5
31. Number of policies / regulations / administrative procedures prepared passed/approved (Stage 4)			0		n = 0	n = 0
32. Number of policies / regulations / administrative procedures passed for which implementation has begun (Stage 5)			1		n = 1 1. Registration of live vaccine for East Coast Fever, Uganda	n= 0
OUTCOMES ON THE GROUND						
33. Number of hectares under improved technologies or management practices as a result of CRP research			20,480		n = 331,070ha (31,070 new and 300,000 continuing) a. New areas 25, 000ha; Kafr el Sheikh, Behera, Sharkia, Fayoum in Egypt (Aquaculture)	n = 232,148ha (162,352 ha new + 69,796 ha continued)

					6,707ha; Improved Red Masaai sheep; Machakos, Kisumu, Narok, Nakuru and Kajiado counties, in Kenya b. Continuing areas 300,000ha; Latin and Central America (Bracharia hybrid Mulatto)	
34. Number of farmers and others who have applied new technologies or management practices as a result of CRP research			26,105		n = 2,471 farmers/others (1,942 male & 529 female) a. Female farmers/others a.i. New areas 500 fish retailers; villages near Governorates of Kafr el Sheikh, Behera, Fayoum, Sharkia, Meneya in Egypt a.ii. Continuing areas 29 sheep farmers; Amhara, Oromia, SSNP in Ethiopia b. Male farmers b.i. New areas 1,600 fish farmers; Governorates of Kafr el Sheikh, Behera, Fayoum, Sharkia in Egypt b.ii. Continuing areas 342 sheep farmers; Amhara, Oromia, SNNPR in Ethiopia	n = 2,040 (1,520 male + 520 female)

Annex 2. Performance indicators for gender mainstreaming with targets defined

• Performance Indicator	• CRP performance approaches requirements	• CRP performance meets requirements	• CRP performance exceeds requirements

• 1. Gender inequality targets defined • • •	• Sex-disaggregated social data is being collected and used to diagnose important gender-related constraints in at least one of the CRP's main target populations • • •	• Sex-disaggregated social data collected and used to diagnose important gender-related constraints in at least one of the CRP's main target populations • And • The CRP has defined and collected baseline data on the main dimensions of gender inequality in the CRP's main target populations relevant to its expected outcomes (IDOs) • Teams in the program's value chain countries have conducted (in Tanzania) or are conducting gender analyses and/or gender integrated baseline data collection (in Egypt, Ethiopia, Uganda, Nicaragua) to identify relevant gender based constraints operating among key populations in the chains. These efforts go beyond collecting sex disaggregated data in most instances, in line with the value chain analysis tools being tested in the CRP. These tools aim to integrate gender, and even 'transformative' issues around gender norms and attitudes, in value chain analysis to provide data needed to design gender responsive and transformative interventions. Therefore, the tools aim to identify drivers of gender inequality.	• Sex-disaggregated social data collected and used to diagnose important gender-related constraints in at least one of the CRP's main target populations • And • The CRP has defined and collected baseline data on the main dimensions of gender inequality in the CRP's main target populations relevant to its expected outcomes (IDOs) • And • CRP targets changes in levels of gender inequality to which the CRP is or plans to contribute, with related numbers of men and women beneficiaries in main target populations • • • • • • • • •

• Performance Indicator	• CRP performance approaches requirements	• CRP performance meets requirements	• CRP performance exceeds requirements
• 2. Institutional architecture for integration of gender is in place •	- CRP scientists and managers with responsibility for gender in the CRP's outputs are appointed**,** have written TORS. - Procedures defined to report use of available diagnostic or baseline knowledge on gender routinely for assessment of the gender equality implications of the CRP's flagship research products as per the Gender Strategy -CRP M&E system has protocol for tracking progress on integration of gender in research The Gender Theme currently has two full-time gender scientists and one gender research technician with clear TORs and work plans. We also have the equivalent of one additional full-time gender position but split across three countries. The Gender Theme has drafted process indicators to monitor and evaluate progress on the Gender Strategy, and is working with the M&E team to draft gender -appropriate IDOs. The Gender team (in conjunction with the CG Gender Network) has begun to define standards for assessing the gender implications of the CRP flagship projects.	- CRP scientists and managers with responsibility for gender in the CRP's outputs are appointed, have written TORS and funds allocated to support their interaction. - Procedures defined to report use of available diagnostic or baseline knowledge on gender routinely for assessment of the gender equality implications of the CRP's flagship research products as per the Gender Strategy -CRP M&E system has protocol for tracking progress on integration of gender in research And A CRP plan approved for capacity development in gender analysis	CRP scientists and managers with responsibility for gender in the CRP's outputs are appointed, have written TORS and funds allocated to support their interaction. - Procedures defined to report use of available diagnostic or baseline knowledge on gender routinely for assessment of the gender equality implications of the CRP's flagship research products as per the Gender Strategy -CRP M&E system has protocol for tracking progress on integration of gender in research And A CRP plan approved for capacity development in gender analysis • And • The CRP uses feedback provided by its M&E system to improve its integration of gender into research

Annex 3. Financial reports

GIAR TEMPLATE: L101

CRP No. 3.7 - "Livestock and Fish"
Period: 01/01/2012 - 12/31/2013
Amounts in USD (000's)

Cumulative Financial Summary

Report Description

Name of Report:	Cumuative Financial Summary
Frequency/Period:	Annual
Deadline:	Every April 15th

Summary Report - by CG Partners	(a) Total POWB budget since inception					(b) Actual cumulative Expenses					(c) Variance / Balance				
	Windows 1 & 2	Window 3	Bilateral Funding	Center funds	Total Funding	Windows 1 & 2	Window 3	Bilateral Funding	Center funds	Total Funding	Windows 1 & 2	Window 3	Bilateral Funding	Center funds	Total Funding
1. AFRICA RICE					-					-	-	-	-	-	-
2. BIOVERSITY					-					-	-	-	-	-	-
3. CIAT	2,537	677	4,234		7,448	2,472	189	2,998	-	5,658	65	489	1,237	-	1,790
4. CIFOR	-	-	-		-	-	-	-	-	-	-	-	-	-	-
5. CIMMYT	-	-	-		-	-	-	-	-	-	-	-	-	-	-
6. CIP	-	-	-		-	-	-	-	-	-	-	-	-	-	-
7. ICARDA	967	40	308		1,315	918	22	291	-	1,230	49	18	17	-	85
8. ICRAF	-	-	-		-	-	-	-	-	-	-	-	-	-	-
9. ICRISAT	-	-	-		-	-	-	-	-	-	-	-	-	-	-
10. IFPRI	-	-	-		-	-	-	-	-	-	-	-	-	-	-
11. IITA	-	-	-		-	-	-	-	-	-	-	-	-	-	-
12. ILRI	16,270	2,022	10,469	-	28,760	13,394	1,999	9,935	-	25,329	2,876	22	534	-	3,431
13. IRRI	-	-	-		-	-	-	-	-	-	-	-	-	-	-
14. IWMI	-	-	-		-	-	-	-	-	-	-	-	-	-	-
15. WORLDFISH	2,440	558	4,259		7,257	2,319	2,704	3,519	59	8,601	121	(2,146)	740	(59)	(1,344)
Total for CRP	**22,214**	**3,297**	**19,270**	-	**44,781**	**19,104**	**4,914**	**16,742**	**59**	**40,818**	**3,110**	**(1,617)**	**2,528**	**(59)**	**3,963**
	50%	**7%**	**43%**	**0%**	**100%**	**47%**	**12%**	**41%**	**0%**	**100%**	**78%**	**-41%**	**64%**	**-1%**	**100%**

CGIAR TEMPLATE: L106

CRP :	**"3.7" - "Livestock and Fish"**	**Annual Funding**			
Period:	**31-Dec-13**				
Amounts in USD (000's)					
Report Description					
Name of Report: Annual Funding Summary					
Frequency/Period: Annual					
Deadline:	Every April 15th				

PART 1 - Annual FINANCE PLAN (Totals for Windows 1 and 2 combined)

Approved Level for Year - Initial Approval (as per PIA)	
Approved Level for Year - Final Amount	

PART 2 - Funding Summary for Year

		2013 Actual Funding			
		Windows 1&2	**Window 3**	**Bilateral Funding**	**Total Funding**
1	CGIAR Fund	11,386	-	-	11,386
2	ACIAR	-	-	220	220
3	ARC Egypt	-	-	51	51
4	ASARECA	-	-	47	47
5	AWARD	-	-	9	9
6	BBSRC	-	-	187	187
7	BMGF	-	121	237	358
8	DOW	-	-	269	269
9	EC	-	1,280	69	1,350
10	EC/ IFAD	-	1,155	-	1,155
11	EMBRAPA	-	-	49	49
12	Finland	-	-	457	457
13	FMD	-	-	12	12
14	Ford Foundation	-	-	100	100
15	GIZ	-	-	1,193	1,193
16	Heifer International	-	-	297	297
17	IFAD	-	-	495	495
18	IFPRI	-	-	185	185
19	ILRI	-	-	156	156
20	INIA	-	74	-	74
21	INIFAP	-	-	76	76
22	Irish Aid	-	-	508	508
23	JCV	-	-	129	129
25	KARI	-	-	331	331
26	KU	-	5	-	5
27	LOL	-	-	3	3
28	MAFF/JAPAN	-	156	-	156
29	Mexican	-	150	-	150
30	MEXICO	-	28	50	77
31	New York University	-	-	148	148
34	RDA	-	-	191	191
35	RGCA	-	-	40	40
36	RLF	-	-	3	3
37	SDC	-	-	1,355	1,355
38	SUA	-	-	103	103
39	UNEP	-	-	635	635
40	University of New England	-	-	183	183
41	University of Vermont	-	-	136	136
42	USAID	-	1,295	490	1,785
43	USDA	-	-	92	92
44	UWA	-	-	8	8
45	Others< 50K	-	95	243	338
Total for CRP "X.X"		**11,386**	**4,359**	**8,758**	**24,502**

CRP No. "3.7" - "Livestock and Fish"
31-Dec-13
Amounts in USD (000's)

Annual Financial Summary by Centers

CGIAR
Science for a food secure future

Report Description

Name of Report:	Annual Financial Summary by Centers & Other Participants
Frequency/Period:	Annual
Deadline:	Every April 15th

Summary Report - by CG Partners	(a) CRP 2013 POWB approved budget					(b) CRP 2013 Expenditure					(c) Variance this Year				
	Windows 1 & 2	Window 3	Bilateral Funding	Center funds	Total Funding	Windows 1 & 2	Window 3	Bilateral Funding	Center funds	Total Funding	Windows 1 & 2	Window 3	Bilateral Funding	Center funds	Total Funding
1. AFRICA RICE					-					-	-	-	-	-	-
2. BIOVERSITY	-	-	-	-	-					-	-	-	-	-	-
3. CIAT	1,362	677	2,740	-	4,779	1,297	189	1,503	-	2,989	65	489	1,237	-	1,790
4. CIFOR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5. CIMMYT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6. CIP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7. ICARDA	546	40	196	-	782	497	22	179	-	698	49	18	17	-	84
8. ICRAF	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9. ICRISAT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10. IFPRI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11. IITA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12. ILRI	11,284	1,228	5,888	-	18,400	8,407	1,386	5,430	-	15,223	2,877	(158)	458	-	3,177
13. IRRI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14. IWMI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15. WORLDFISH	1,305	411	2,195	-	3,911	1,184	2,704	1,646	59	5,593	121	(2,293)	549	(59)	(1,682)
Total for CRP	**14,497**	**2,356**	**11,018**	**-**	**27,871**	**11,386**	**4,300**	**8,758**	**59**	**24,502**	**3,111**	**(1,944)**	**2,261**	**(59)**	**3,369**
	52%	**8%**	**40%**	**0%**	**100%**	**46%**	**18%**	**36%**	**0%**	**100%**	**92%**	**-58%**	**67%**	**-2%**	**100%**

Note -

The budget includes the 2012 carryover of $2,615; IRLI of $2,585; CIAT OF $1; ICARDA $29.

Annual Financial Summary by Natural Classification

CRP No. "3.7" - "Livestock and Fish"
31-Dec-13
Amounts in USD 000's

Report Description
Name of Report: Financial Summary by Natural Classification lines
Frequency/Period: Annual
Deadline: Every April 15th

Total CRP"3.7"	POWB Approved Budget					Actual					Unspent/Variance				
	Windows 1 & 2	Window 3	Bilateral Funding	Center Funds	Total Funding	Windows 1 & 2	Window 3	Bilateral Funding	Center Funds	Total Funding	Windows 1 & 2	Window 3	Bilateral Funding	Center Funds	Total Funding
Personnel	5,983	826	3,628	-	10,438	5,062	1,733	3,202	-	9,997	921	(907)	426	-	441
Collaborators Costs - CGIAR Centers	301	127	-	-	428	-	-	-	-	-	301	127	-	-	428
Collaborator Costs - Partners	30	97	1,775	-	1,902	157	308	1,386	-	1,850	(127)	(211)	389	-	52
Supplies and services	5,516	703	3,705	-	9,924	3,515	1,411	2,699	-	7,625	2,001	(708)	1,006	-	2,298
Operational Travel	874	233	589	-	1,697	557	239	639	-	1,436	317	(6)	(50)	-	261
Depreciation	5	42	44	-	91	98	119	0	59	277	(93)	(78)	44	(59)	(186)
Sub-total of Direct Costs	**12,710**	**2,027**	**9,742**	**-**	**24,479**	**9,390**	**3,811**	**7,926**	**59**	**21,186**	**3,320**	**(1,784)**	**1,816**	**(59)**	**3,293**
Indirect Costs	1,787	328	1,277	-	3,392	1,996	489	832	-	3,317	(209)	(160)	445	-	76
Total - All Costs	14,497	2,356	11,018	-	27,871	11,386	4,300	8,758	59	24,502	3,111	(1,944)	2,261	(59)	3,369
LESS Coll Costs CGIAR Centers	(301)	**(127)**	-	-	**(428)**	-	-	-	-	-	**(301)**	**(127)**	-	-	**(428)**
Total Net Costs	14,196	2,229	11,018	-	27,443	11,386	4,300	8,758	59	24,502	2,810	(2,071)	2,261	(59)	2,941

Amounts for each participating center below:

CIAT	POWB Approved Budget					Actual					Unspent/Variance				
Personnel	720	181	515		1,416	609	40	465		1,114	111	141	50	-	302
Collaborators Costs - CGIAR Centers	-	-	-		-	-	-	-		-	-	-	-	-	-
Collaborator Costs - Partners	-	-	724		724	-	-	385		385	-	-	339	-	339
Supplies and services	440	262	1,027		1,729	478	85	362		925	(38)	178	665	-	804
Operational Travel	20	110	118		248	39	28	123		191	(19)	81	(5)	-	57
Depreciation	5	25	40		70	2	10	-		12	3	15	40	-	58
Sub-total of Direct Costs	**1,185**	**578**	**2,424**	**-**	**4,188**	**1,128**	**163**	**1,335**	**-**	**2,626**	**57**	**415**	**1,089**	**-**	**1,561**
Indirect Costs	177	99	315		591	169	25	168		362	8	74	147	-	229
Total - All Costs	**1,362**	**677**	**2,740**	**-**	**4,779**	**1,297**	**189**	**1,503**	**-**	**2,989**	**65**	**489**	**1,237**	**-**	**1,790**
LESS Coll Costs CGIAR Centers	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Net Costs	**1,362**	**677**	**2,740**	**-**	**4,779**	**1,297**	**189**	**1,503**	**-**	**2,989**	**65**	**489**	**1,237**	**-**	**1,790**

ICARDA	POWB Approved Budget					Actual					Unspent/Variance				
Personnel	291	-	6		297	242	-	6		248	48	-	-	-	48
Collaborators Costs - CGIAR Centers	-	-	-		-	-	-	-		-	-	-	-	-	-
Collaborator Costs - Partners	-	13	17		30	35	21	37		93	(35)	(8)	(20)	-	(63)
Supplies and services	92	7	123		221	89	1	79		169	2	6	44	-	52
Operational Travel	73	13	27		113	48	-	38		86	25	13	(11)	-	27
Depreciation	-	7	2		9	-	-	-		-	-	7	2	-	9
Sub-total of Direct Costs	455	40	175	-	**670**	**414**	**22**	**160**	**-**	**596**	**41**	**18**	**15**	**-**	**74**
Indirect Costs	91	-	21		112	83	-	19		102	8	-	2	-	10
Total - All Costs	**546**	**40**	**196**	**-**	**782**	**497**	**22**	**179**	**-**	**698**	**49**	**18**	**17**	**-**	**84**
LESS Coll Costs CGIAR Centers	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Net Costs	**546**	**40**	**196**	**-**	**782**	**497**	**22**	**179**	**-**	**698**	**49**	**18**	**17**	**-**	**84**

ILRI	POWB Approved Budget					Actual					Unspent/Variance				
Personnel	3,221	501	2,282		6,003	2,599	610	1,987		5,196	622	(109)	294	-	807
Collaborators Costs - CGIAR Centers	50	127	-		177	-	-	-		-	50	127	-	-	177
Collaborator Costs - Partners	30	45	633		708	116	115	692		923	(86)	(70)	(59)	-	(215)
Supplies and services	4,644	290	1,993		6,928	2,630	388	1,860		4,878	2,015	(98)	133	-	2,049
Operational Travel	163	104	283		550	283	73	410		766	(120)	31	(127)	-	(217)
Depreciation	-	-	-		-	0	-	-		0	(0)	-	-	-	(0)
Sub-total of Direct Costs	**8,108**	**1,066**	**5,191**	**-**	**14,365**	**5,628**	**1,186**	**4,950**	**-**	**11,764**	**2,480**	**(120)**	**241**	**-**	**2,601**
Indirect Costs	1,063	161	697		1,921	1,410	200	480		2,090	(347)	(38)	217	-	(169)
Total - All Costs	**9,171**	**1,228**	**5,888**	**-**	**16,286**	**7,038**	**1,386**	**5,430**	**-**	**13,854**	**2,132**	**(158)**	**458**	**-**	**2,432**
LESS Coll Costs CGIAR Centers	(50)	**(127)**	-	-	**(177)**	-	-	-	-	-	**(50)**	**(127)**	-	-	**(177)**
Total Net Costs	**9,121**	**1,101**	**5,888**	**-**	**16,110**	**7,038**	**1,386**	**5,430**	**-**	**13,854**	**2,082**	**(285)**	**458**	**-**	**2,256**

	Windows 1 & 2	Window 3	Bilateral Funding	Center Funds	Total Funding	Windows 1 & 2	Window 3	Bilateral Funding	Center Funds	Total Funding	Windows 1 & 2	Window 3	Bilateral Funding	Center Funds	Total Funding
WORLDFISH	**POWB Approved Budget**					**Actual**					**Unspent/Variance**				
Personnel	907	145	826		1,877	843	1,084	744	-	2,671	64	(939)	82	-	(793)
Collaborators Costs - CGIAR Centers	-	-	-		-	-	-	-	-	-	-	-	-	-	-
Collaborator Costs - Partners	-	39	401		440	6	172	272	-	449	(6)	(133)	129	-	(9)
Supplies and services	123	144	562		828	21	938	398	-	1,356	101	(794)	164	-	(528)
Operational Travel	96	6	161		264	47	138	68	-	252	49	(132)	93	-	11
Depreciation	-	9	2		11	96	109	0	59	264	(96)	(100)	2	(59)	(253)
Sub-total of Direct Costs	**1,126**	**343**	**1,951**	**-**	**3,420**	**1,013**	**2,440**	**1,481**	**59**	**4,993**	**113**	**(2,097)**	**470**	**(59)**	**(1,573)**
Indirect Costs	179	68	244		491	171	264	165		600	8	(196)	79	-	(110)
Total - All Costs	**1,305**	**411**	**2,195**	**-**	**3,911**	**1,184**	**2,704**	**1,646**	**59**	**5,593**	**121**	**(2,293)**	**549**	**(59)**	**(1,682)**
LESS Coll Costs CGIAR Centers	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Net Costs	**1,305**	**411**	**2,195**	**-**	**3,911**	**1,184**	**2,704**	**1,646**	**59**	**5,593**	**121**	**(2,293)**	**549**	**(59)**	**(1,682)**

PMU	**POWB Approved Budget**					**Actual**					**Unspent/Variance**				
Personnel	845	-	-	-	845	769	-	-	-	769	76	-	-	-	76
Collaborators Costs - CGIAR Centers	251	-	-	-	251	-	-	-	-	-	251	-	-	-	251
Collaborator Costs - Partners	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Supplies and services	218	-	-	-	218	297	-	-	-	297	(79)	-	-	-	(79)
Operational Travel	522	-	-	-	522	140	-	-	-	140	382	-	-	-	382
Depreciation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sub-total of Direct Costs	**1,836**	**-**	**-**	**-**	**1,836**	**1,206**	**-**	**-**	**-**	**1,206**	**630**	**-**	**-**	**-**	**630**
Indirect Costs	277				277	163				163	115	-	-	-	115
Total - All Costs	**2,113**	**-**	**-**	**-**	**2,113**	**1,369**	**-**	**-**	**-**	**1,369**	**745**	**-**	**-**	**-**	**745**
LESS Coll Costs CGIAR Centers	(251)	-	-	-	**(251)**	-	-	-	-	-	**(251)**	-	-	-	**(251)**
Total Net Costs	**1,862**	**-**	**-**	**-**	**1,862**	**1,369**	**-**	**-**	**-**	**1,369**	**493**	**-**	**-**	**-**	**493**

CGIAR TEMPLATE: L131

CRP No. "3.7" - "Livestock and Fish"
Period: 12/31/2013
Amounts in USD 000's

Annual Financial Summary by Themes

CGIAR
Science for a food secure future

Report Description

Name of Report:	Financial Summary by Themes
Frequency/Period:	Annual
Deadline:	Every April 15th

	POWB Approved	Current Year Actual Expenditures	Unspent Budget
Summary Report - by Themes			
Theme 1: Animal Health	4,833	4,883	(50)
Theme 2: Animal Genetics	4,357	6,213	(1,856)
Theme 3: Feeds and Forages	6,331	4,021	2,309
Theme 4: Value Chain Development	6,246	5,495	751
Theme 5: Targeting Sustainable Interventions	1,505	822	683
Gender Strategies	2,487	1,700	787
CRP Management/Coordination	2,113	1,369	745
Total - All Costs	**27,871**	**24,502**	**3,369**
CIAT			
Theme 1: Animal Health			-
Theme 2: Animal Genetics			-
Theme 3: Feeds and Forages	3,695	2,328	1,367
Theme 4: Value Chain Development	840	528	313
Theme 5: Targeting Sustainable Interventions	-	-	-
Gender Strategies	244	133	111
CRP Management/Coordination			-
Total - All Costs	4,779	2,989	1,790
ICARDA			
Theme 1: Animal Health			-
Theme 2: Animal Genetics	385	414	(29)
Theme 3: Feeds and Forages	119	46	73
Theme 4: Value Chain Development	278	238	40
Theme 5: Targeting Sustainable Interventions	-	-	-
Gender Strategies	-	-	-
CRP Management/Coordination			-
Total - All Costs	782	698	84
ILRI			
Theme 1: Animal Health	4,737	4,445	292
Theme 2: Animal Genetics	2,872	2,889	(16)
Theme 3: Feeds and Forages	2,468	1,588	880
Theme 4: Value Chain Development	3,512	3,273	239
Theme 5: Targeting Sustainable Interventions	1,095	497	597
Gender Strategies	1,602	1,161	441
CRP Management/Coordination	2,113	1,369	745
Total - All Costs	18,400	15,223	3,177
WORLDFISH			
Theme 1: Animal Health	96	438	(342)
Theme 2: Animal Genetics	1,099	2,910	(1,811)
Theme 3: Feeds and Forages	49	60	(11)
Theme 4: Value Chain Development	1,616	1,456	160
Theme 5: Targeting Sustainable Interventions	410	324	86
Gender Strategies	641	405	236
CRP Management/Coordination	-	-	-
Total - All Costs	3,911	5,593	(1,682)

CRP No. "3.7" - "More Meat, Milk and Fish"
Period: **01/01/2013 to 12/31/2013**
Amounts in USD 000's

CRP Partnership Report

Report Description

Name of Report: CRP Partnerships Report
Frequency/Period: Annual
Deadline: Every April 15th

TOTAL FOR CRP "X.X"

Item	Institute Acronym	Institute Name	Country	Actual Expenses - This Year				
				Windows 1 & 2	Window 3	Bilateral	Center Funds	TOTAL
1	UG	University of Goettingen	Germany	-	-	11	-	**11**
2	RAB	Rwanda Agriculture Board (RAB)	Rwanda	-	-	16	-	**16**
3	NARO	National Agricultural Research Organization (NARO)	Uganda	-	-	8	-	**8**
4		NARS (CSIRO, AUS; Univ. Of Murdoch, AUS; MORU, THA, ...)	Laos	-	-	83	-	**83**
5		CORPOICA	Colombia	-	-	6	-	**6**
6	UH	University of Hohenheim	Germany	-	-	25	-	**25**
7	NAFRI	National Agriculture and Forestry Research Institute - Ministry of A	Cambodia/Laos/Vietnam	-	-	169	-	**169**
8	DAPH	Department of Animal Production and Health (DAPH)	Combodia	-	-	37	-	**37**
9	RUA	RUA Royal University of Agriculture	Combodia	-	-	22	-	**22**
10	NARS	NARS		-	-	9	-	**9**
11	APRI	Animal Production Research Institute	Egypt	-	-	37	-	**37**
12	OSU	Oregon State University	USA	-	21	-	-	**21**
13	IMAU	Inner Mongolia Agriculture University	China	21	-	-	-	**21**
14	BARC	Bako Agricultural Research Center	Ethiopia	7	-	-	-	**7**
15	DBARC	Debre Birhan Agricultural Research Center	Ethiopia	7	-	-	-	**7**
16	BAU	Bangladesh Agricultural University	Bangladesh	-	-	18	-	**18**
17	CIAT	International Centre for Tropical Agriculture	Colombia	-	64	-	-	**64**
18	CHIRAG	Central Himalayan Rural Action Group	India	-	25	-	-	**25**
19	CVL	CENTRAL VETERINARY LABORATORY, WINDHOEK	Namibia	-	-	61	-	**61**
20	EISMV	Ecole Inter-Ettats des Sciences et Medicine Veterinaires	Senegal	-	-	152	-	**152**
21	EIAR	Ethiopian Institute of Agricultural Research	Ethiopia	-	-	17	-	**17**
22	FORWARD Nepal	FORWARD Nepal	Nepal	-	-	8	-	**8**
23	FLI	FRIEDRICH-LOFFLER-INSTITUTE	Germany	-	-	112	-	**112**
24	HI	Heifer International	Tanzania	-	-	40	-	**40**
25	INHERE	Institute of Himalayan Environmental Research and Education	India	-	26	-	-	**26**
26	KARI	Kenya Agricultural Research Institute	Kenya	-	-	14	-	**14**
27	NIAH	National Institute of Animal Husbundry	Vietnam	-	-	48	-	**48**
28	NLU	Nong Lam University	Vietnam	-	-	9	-	**9**
29	SUA	Sokoine University of Agriculture	Tanzania	26	-	37	-	**63**
30		University of Peradeniya	Sri Lanka	-	-	15	-	**15**
31	TDB	Tanzania Dairy Board	Tanzania	-	-	11	-	**11**
32	TIHO	UNIVERSITY OF VETERINARY MEDICINE HANNOVER (TIHO)	Germany	-	-	49	-	**49**
33	UoN	Univ of Nottingham-KOR014	UK	-	-	60	-	**60**
34	UAF	University of Agriculture Faisalabad-Pakistan	Pakistan	-	-	42	-	**42**
36	IIASA	International Institute for Applied Systems Analysis	Austria	90	-	-	-	**90**
38		Bangladesh Fisheries Research Institute	Bangladesh	-	8	-	-	**8**
39		BSFF	Bangladesh	-	7	-	-	**7**
40		CARE International	(blank)	-	-	266	-	**266**

41		CODEC	Bangladesh	-	64	-	-	64
42		Innpact Sarl	Luxemburg	-	-	0	-	0
43		Ministry of Agriculture and Forestry Research Institute for Aquacul	Vietnam	-	28	-	-	28
44		SAVE	Bangladesh	-	13	-	-	13
45		Speed Trust	Bangladesh	-	35	-	-	35
46		University Hanover	Germany	-	-	5	-	5
47		Unversity of Malawi	Malawi	-	8	-	-	8
48		Water Research Institute, Ghana	Ghana	-	9	-	-	9
49		Others	(blank)	6	-	-	-	6
	Total for CRP			**157**	**308**	**1,386**	**-**	**1,850**

3. CIAT

Item	Institute Acronym	Institute Name	Country	Actual Expenses - This Year				
				Windows 1 & 2	Window 3	Bilateral	Center Funds	TOTAL
1	UG	University of Goettingen	Germany	-	-	11	-	11
2	RAB	Rwanda Agriculture Board (RAB)	Rwanda	-	-	16	-	16
3	NARO	National Agricultural Research Organization (NARO)	Uganda	-	-	8	-	8
4		NARS (CSIRO, AUS; Univ. Of Murdoch, AUS; MORU, THA, ...)	Laos	-	-	83	-	83
5	UNA	Universidad Nacional Agraria (UNA)	Nicaragua	-	-	-	-	-
6		CORPOICA	Colombia	-	-	6	-	6
7	UH	University of Hohenheim	Germany	-	-	25	-	25
8	NAFRI	National Agriculture and Forestry Research Institute - Ministry of A	Cambodia/Laos/Vietnam	-	-	169	-	169
9	TNU	Tay Nguyen University (TNU)	VietNama	-	-	-	-	-
10	DAPH	Department of Animal Production and Health (DAPH)	Combodia	-	-	37	-	37
11	RUA	RUA Royal University of Agriculture	Combodia	-	-	22	-	22
12		NARS		-	-	9	-	9
13	SUA	SOKOINE UNIVERSITY OF AGRICULTURE (SUA)	Tanzania	-	-	-	-	-
14	TALIRI	Tanzania Livestock Research Institute (TALIRI)	Tanzania					-
		Total for CRP		**-**	**-**	**385**	**-**	**385**

7. ICARDA

Item	Institute Acronym	Institute Name	Country	Actual Expenses - This Year				
				Windows 1 & 2	Window 3	Bilateral	Center Funds	TOTAL
1	APRI	Animal Production Research Institute	Egypt	-	-	37	-	37
2	OSU	Oregon State University	USA	-	21	-	-	21
3	IMAU	Inner Mongolia Agriculture University	China	21	-	-	-	21
4	BARC	Bako Agricultural Research Center	Ethiopia	7	-	-	-	7
5	DBARC	Debre Birhan Agricultural Research Center	Ethiopia	7	-	-	-	7
		Total for CRP		**35**	**21**	**37**	**-**	**93**

12. ILRI

Item	Institute Acronym	Institute Name	Country	Actual Expenses - This Year				
				Windows 1 & 2	Window 3	Bilateral	Center Funds	TOTAL
1	BAU	Bangladesh Agricultural University	Bangladesh	-	-	18	-	18
2	CIAT	International Centre for Tropical Agriculture	Colombia	-	64	-	-	64
3	CHIRAG	Central Himalayan Rural Action Group	India	-	25	-	-	25
4	CVL	CENTRAL VETERINARY LABORATORY, WINDHOEK	Namibia	-	-	61	-	61
5	EISMV	Ecole Inter-Ettats des Sciences et Medicine Veterinaires	Senegal	-	-	152	-	152
6	EIAR	Ethiopian Institute of Agricultural Research	Ethiopia	-	-	17	-	17
7	FORWARD Nepal	FORWARD Nepal	Nepal	-	-	8	-	8

8	FLI	FRIEDRICH-LOFFLER-INSTITUTE	Germany	-	-	112	-	112
9	HI	Heifer International	Tanzania	-	-	40	-	40
10	INHERE	Institute of Himalayan Environmental Research and Education	India	-	26	-	-	26
11	KARI	Kenya Agricultural Research Institute	Kenya	-	-	14	-	14
12	NIAH	National Institute of Animal Husbundry	Vietnam	-	-	48	-	48
13	NLU	Nong Lam University	Vietnam	-	-	9	-	9
14	SUA	Sokoine University of Agriculture	Tanzania	26	-	37	-	63
15		University of Peradeniya	Sri Lanka	-	-	15	-	15
16	TDB	Tanzania Dairy Board	Tanzania	-	-	11	-	11
17	TIHO	UNIVERSITY OF VETERINARY MEDICINE HANNOVER (TIHO)	Germany	-	-	49	-	49
18	UoN	Univ of Nottingham-KOR014	UK	-	-	60	-	60
19	UAF	University of Agriculture Faisalabad-Pakistan	Pakistan	-	-	42	-	42
21	IIASA	International Institute for Applied Systems Analysis	Austria	90	-	-	-	90
		Total for CRP		**116**	**115**	**692**	**-**	**923**

15. WORLDFISH

Item	Institute Acronym	Institute Name	Country	Actual Expenses - This Year: Windows 1 & 2	Window 3	Bilateral	Center Funds	TOTAL
1		Bangladesh Fisheries Research Institute	Bangladesh	-	8	-	-	8
2		BSFF	Bangladesh	-	7	-	-	7
3		CARE International	(blank)	-	-	266	-	266
4		CODEC	Bangladesh	-	64	-	-	64
5		Innpact Sarl	Luxemburg	-	-	0	-	0
6		Ministry of Agriculture and Forestry Research Institute for Aquacul	Vietnam	-	28	-	-	28
7		SAVE	Bangladesh	-	13	-	-	13
8		Speed Trust	Bangladesh	-	35	-	-	35
9		University Hanover	Germany	-	-	5	-	5
10		Unversity of Malawi	Malawi	-	8	-	-	8
11		Water Research Institute, Ghana	Ghana	-	9	-	-	9
12		Others	(blank)	6	-	-	-	6
		Total for CRP		**6**	**172**	**272**	**-**	**449**

TOTAL FOR CRP "X.X"

	Actual Expenses - This Year: Windows 1 & 2	Window 3	Bilateral	Center Funds	TOTAL
1. AFRICA RICE	-	-	-	-	-
2. BIOVERSITY	-	-	-	-	-
3. CIAT	-	-	385	-	385
4. CIFOR	-	-	-	-	-
5. CIMMYT	-	-	-	-	-
6. CIP	-	-	-	-	-
7. ICARDA	35	21	37	-	93
8. ICRAF	-	-	-	-	-
9. ICRISAT	-	-	-	-	-
10. IFPRI	-	-	-	-	-
11. IITA	-	-	-	-	-
12. ILRI	116	115	692	-	923
13. IRRI	-	-	-	-	-
14. IWMI	-	-	-	-	-
15. WORLDFISH	6	172	272	-	449
Total for CRP	**157**	**308**	**1,386**	**-**	**1,850**

Notes

All figures shown here are illustrative only, and are in USD 000's

Amounts reported are for actual expenditure, so unliquidated advances not included.

Institutes should be clearly identifiable by name and/or acronym, plus country.

Totals within this report must agree with amounts reported in L121 "Collaborator Costs - Partners".